

**MPC - Salt Lake City
Project Cost Summary**

Project Title: Cogen NOx Compliance

Project Number: SL.22369

Proj. Location: MPC Salt Lake City, UT

Estimate Date: 7/13/2023

Job No: MU015

Est. Class: CONCEPTUAL

Prep. By: CLE

Account	QTY	Unit	Total Cost
Demolition	1	LT	\$11,600
Site Work & Civil	76	CY	\$81,144
Concrete	257	CY	\$589,850
Steel	16	TN	\$503,855
Equipment	9	EA	\$6,703,163
Piping	4,752	LF	\$894,065
Piping Fabrication	38,752	LB	\$147,759
Electrical	15,170	LF	\$393,113
Instrument	15	EA	\$973,962
Paint	7,434	SF	\$64,537
Insulation	3,964	LF	\$145,859
Critical Lift/Heavy Haul			\$616,154
Per Diem/Overtime			\$501,643
Total Field Costs			\$11,626,704
Engineering & Owners Cost			\$3,728,446
Escalation			\$391,895
Contingency			\$6,752,955
Total Other Costs			\$10,873,296
Total Installed Cost			\$22,500,000

This estimate was developed as part of the Conceptual Phase of this project. To ensure that major projects are developed and implemented in a safe and reliable manner, and to ensure safe and optimal long-term operations of a large capital project, Marathon follows a strict project development process. This process follows a set of proven methods and tools for planning and executing projects and Marathon requires all major engineering projects to adhere to this framework. Projects designed and implemented under this framework go through multiple phases to divide projects into smaller logical units to increase manageability. The five phases include, chronologically, a conceptual, feasibility, definition, implementation (includes detailed design, procurement, & construction) and startup phase. Based on the duration of time attributed to each phase established by industry benchmarking data for similarly sized capital projects, a major engineering project can take up to 5 years to complete. Marathon obtains industry benchmarking data from Independent Project Analysis (IPA).

The project team worked with ENTRUST Solutions Group, LLC to complete a technical evaluation of the expected performance level for NOx emissions at the existing East (CG-1) and West (CG-2) cogeneration units to retrofit the units with a selective catalytic reduction (SCR) system. The Team identified key components required for this Cogen system retrofit to reduce NOx. Quotes were obtained for some equipment. As typical for an estimate for Conceptual Phase, in lieu of quoted equipment, Marathon applies factored estimates (based on previous projects and industry experience) and makes cost adjustments. The adjustments are tied to size, timing, materials, complexity, and other factors.

Contingency of 30% at Conceptual Phase adheres to Marathon's project development process and is typical of industry practice. Contingency percentage will decrease as the project advances to the next stage of project development. Generally, the cost of project (without contingency) goes up as unknown costs are revealed.